

Synoptic Analysis of Catastrophe Heavy Rain and Strong winds over Sri Lanka on 01st June 2014

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ABSTRACT

Climatological onset of southwest monsoon in Sri Lanka is on 25th May ± 5 and the month of June belongs to the southwest monsoons was delayed in 2014 and catastrophe heavy thunderstorm occurred in the western parts of Sri Lanka on 01st June 2014 evening. Nearly 110,743 people were affected and 6 people were killed from floods, landslides and strong winds. On the particular day some places reported more than 300 mm within 6 hours. This condition was continued for next two days too. This paper carried out a synoptic study in order to find reasons for such heavy rainy situation by analyzing Global Forecasting System (GFS) data based on 31st May 2014.

1 Introduction

This study focuses to find the possibility of issuing a severe weather warning on 01st June 2014, in advance by the National Meteorological Centre (NMC) in the Department of Meteorology, Sri Lanka. Severe thunderstorm with strong windy conditions was occurred in the western part of Sri Lanka on 01st evening (just after 1700 SLST) resulting huge disaster and huge economical losses. According to the Asian Disaster Reduction Centre (ADRC) Japan, nearly 110,743 people were affected from the flash flood in the western parts of Sri Lanka and death toll was six (6). Fully damaged and partially damaged houses due to strong winds and floods were about 294 and 1,850 respectively. Department of Meteorology was not able to predict such severe situation with the available weather charts and the other supplements. This condition was continued for next two days too. This paper carried out a synoptic study in order to find reasons for such heavy rainy situation by analyzing Global Forecasting System (GFS) data based on 31st May 2014

2 Synoptic Situation and Forecast

Climatologically, month of June belongs to the southwest monsoon season and heavy rainy spells can be expected during the month of June, particularly during the first two weeks over the southwestern region. Climatologically, onset date of monsoon in Sri Lanka is 25th May with a ± 5 days uncertainty, which is the monsoon onset date in central Arabian ocean (Fieux and Stommel, 1977). Even though, climatological onset date of monsoon is 25th May, it was not established even on 01st of June across Sri Lankan region. Steep (Pressure difference higher than 2.5 hpa between Colombo and Trincomalee at 0830 SLST) southwesterly pressure gradient, strong southwesterly wind flow over Sri Lankan region up to 6000 m (500 hpa), equatorial easterly jet about 40 knots at 200 hpa level over Singapore region are some of the essential criteria to establish southwest monsoon along Sri Lankan region. These criteria were not satisfied until 31st May and even after. Wind anomaly charts (Earth System Research Laboratory) at the level 925 hpa, 850 hpa, 700 hpa and 500 hpa indicated the northeasterly or